WHAT IS CLAIMED IS:

1. An anastomosis device for connecting a graft vessel to a target vessel, the device comprising:

a first linkage formed of a plurality of struts and a plurality of axial members, the first linkage expandable from a first configuration in which the first linkage is a substantially tubular shape to a second configuration in which the first linkage includes a first outwardly extending flange;

a substantially tubular connecting portion extending from the first linkage; and

a second linkage configured to form a second outwardly extending flange spaced from the first outwardly extending flange.

2. The anastomosis device of Claim 1, wherein the plurality of axial members each include a hinge for concentrating bending of the axial members during formation of the first outwardly extending flange.

3. The anastomosis device of Claim 1, wherein the plurality of struts form a plurality of diamond shapes which contract in an axial direction of the device when the device is outwardly expanded.

4. The anastomosis device of Claim 3, wherein the plurality of axial members are each positioned within a corresponding one of the diamond shapes such that as the diamond shapes contract in the axial direction the axial members bend outward to form the first outwardly extending flange.

5. The anastomosis device of Claim 1, wherein the plurality of axial members are inner diamond shaped members connected to the plurality of struts at top and bottom corners and including two hinges at side corners.

6. The anastomosis device of Claim 1, wherein the second linkage is formed of a plurality of struts and a plurality of axial members, and the second linkage is expandable from a first configuration in which the second linkage is a substantially tubular shape to a second configuration in which the second linkage forms the second outwardly extending flange.

7. The anastomosis device of Claim 1, wherein the second linkage is formed of a plurality of pull tabs configured for holding the anastomosis device during insertion.

8. The anastomosis device of Claim 1, wherein the substantially tubular connecting portion is radially expandable.

9. The anastomosis device of Claim 1, wherein the first outwardly extending flange is conical.

10. The anastomosis device of Claim 1, wherein the second outwardly extending flange is conical.

11. An anastomosis device for connecting a graft vessel to a target vessel, the device comprising:

a body formed from a plurality of struts and deformable from a first configuration in which the device is substantially tubular to a second configuration

in which the device includes a first flange and a second flange spaced from the first flange.

12. The anastomosis device of Claim 11, wherein:

a first end of the body includes a first linkage which changes from a substantially tubular configuration to an outwardly extending configuration to form the first flange upon radial expansion of the first end by an expander positioned in a center of the body; and

a second end of the body includes a second linkage which is configured to form the second flange upon deployment of the device.

13. The anastomosis device of Claim 12, wherein the first linkage includes a plurality of struts arranged in a configuration such that an axial dimension of the first linkage changes upon outwardly expansion of the linkage.

14. The anastomosis device of Claim 13, wherein the first linkage includes a plurality of folding members which are caused to fold outward by the change in axial dimension of the first linkage.

15. The anastomosis device of Claim 14, wherein the folding members are axially members with central hinges.

16. The anastomosis device of Claim 14, wherein the folding members are diamond shaped members having two central hinges.

17. The anastomosis device of Claim 12, wherein the first linkage includes a plurality of members which are caused to fold outward tangentially to the device by the change in the axial dimension of the first linkage.

18. The anastomosis device of Claim 11, wherein the first and second flanges each form an angle between about 45 and 100 degrees with an axis of the body.

19. The anastomosis device of Claim 11, wherein the first flange is formed by outwardly pivoting a plurality of substantially axial members which are supported by the plurality of struts.

20. The anastomosis device of Claim 11, wherein the first flange and the second flange are spaced apart a distance sufficient to accommodate a wall of a blood vessel.

21. An anastomosis device comprising an expandable body, the expansion of a portion of said body forming a first flange extending outwardly from said body.

22. The anastomosis device of Claim 21, wherein the expansion of a second portion of said body forms a second flange extending outwardly from said body.

23. The anastomosis device of Claim 21, wherein the first flange is formed by outwardly expanding a four bar linkage which is provided on said body.

24. The anastomosis device of Claim 23, wherein the four bar linkage is formed by a plurality of struts arranged in a plurality of interconnected substantially diamond shapes.

25. An anastomosis device comprising a body of elements which form movable linkages, expansion of the body activates said linkages to form a flange.

26. The anastomosis device of Claim 25, wherein the movable linkages include hinges and wherein expansion of the body causes the hinges to bend to form the flange.

27. The anastomosis device of Claim 25, wherein the flange is formed at a distal end of the body and a proximal flange is formed at a proximal end of the body.

28. The anastomosis device of Claim 27, wherein the proximal flange is formed by expansion of said body.

29. The anastomosis device of Claim 27, wherein the proximal flange is formed of a plurality of pull taps configured for holding the body during insertion.

30. A method of performing anastomosis comprising:
providing a one-piece tubular anastomosis device;
everting an end of a graft vessel around the anastomosis device;
puncturing a target vessel with a trocar;
inserting the tubular anastomosis device with everted graft vessel

into the puncture in the target vessel;

radially expanding the tubular anastomosis device with an expander to cause a portion of the tube to fold outward forming a first annular flange; and

forming a second annular flange on the anastomosis device to trap a wall of the target vessel between the first and second annular flanges and seal the graft vessel to the target vessel.

31. The method of Claim 30, wherein enlargement of an internal diameter of the anastomosis device with the expander causes the formation of the first flange.

32. The method of Claim 30, wherein the device is expanded by advancing an expander with an outer diameter greater than an inner diameter of the anastomosis device into the anastomosis device.

33. The method of Claim 32, wherein the withdrawal of the expander causes formation of the second flange.

34. The method of Claim 33, wherein a groove on the expander catches at least a portion of the anastomosis device to form the second flange.

35. The method of Claim 30, wherein the device is expanded by an expander in the form of an inflatable balloon.

36. The method of Claim 30, wherein the radial expansion of the anastomosis device causes a portion of the device to bend at a plurality of hinges to form the first annular flange.

37. The method of Claim 30, wherein the first and second annular flanges each form an angle between about 45 and 100 degrees with an axis of the device.

38. An anastomosis device deployment system comprising:

a handle;

a holder tube attached to the handle, the holder tube having a distal end configured to hold the anastomosis device with an attached graft vessel; and

an expander positioned within the holder and slidable with respect to the holder to a position at which the expander is positioned within the anastomosis device and radially expands the anastomosis device.

39. The system of Claim 38, further comprising a trocar movable with respect to the holder tube to form an opening in a target vessel to receive the anastomosis device and attached graft vessel.

40. The system of Claim 39, wherein the trocar is a split trocar which is slidable over the holder tube and the anastomosis device.

41. The system of Claim 38, wherein the handle includes two cam grooves, and the holder tube and expander each have a follower member engaged in one of the cam grooves to move the holder tube and expander with respect to one another upon activation of a trigger of the handle.

42. The system of Claim 38, wherein the distal end of the holder tube includes a plurality of slits for receiving pull tabs of the anastomosis device.

43. The system of Claim 38, wherein the distal end of the holder tube includes a plurality of hooks for receiving pull tabs of the anastomosis device.

44. The system of Claim 38, wherein the distal end of the holder tube includes a plurality of flexible fingers which each receive a pull top of the anastomosis device, the flexible fingers flexing outward to form a proximal flange on the anastomosis device.